EXPRESS TERMS
FOR PROPOSED BUILDING STANDARDS
OF THE
OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT

REGARDING PROPOSED CHANGES TO
CALIFORNIA BUILDING CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2, VOLUME 2

LEGEND FOR EXPRESS TERMS
1. Existing California amendments or code language being modified: All such language appears in *italics*, modified language is underlined.
2. New California amendments: All such language appears *underline and in italics*.
3. Repealed text: All such language appears in ~~strikeout~~.

EXPRESS TERMS:

Chapter 16*A* - Structural Design

SECTION 1601*A* - GENERAL

1601*A*.1 Scope. The provisions of this chapter shall govern the structural design of buildings, structures and portions thereof regulated by this code.

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SECTION 1607*A* - LIVE LOADS

1607*A*.1 General. Live loads are those loads defined in Section 1602*A*.1.

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1607*A*.7 Loads on handrails, guards, grab bars, *shower seats, dressing room bench seats,* and vehicle barriers. Handrails, guards, grab bars and vehicle barriers shall be designed and constructed to the structural loading conditions set forth in this section.

1607*A*.7.1 Handrails and guards. Handrail assemblies and guards shall be designed to resist a load of 50 plf (0.73 kN/m) applied in any direction at the top and to transfer this load through the supports to the structure. Glass handrail assemblies and guards shall also comply with Section 2407.

Exceptions:1. For one- and two-family dwellings, only the single concentrated load required by Section 1607*A*.7.1.1 shall be applied.
2. In Group I-3, F, H and S occupancies, for areas that are not accessible to the general public and that have an occupant load less than 50, the minimum load shall be 20 pounds per foot (0.29 kN/m).

1607*A*.7.1.1 Concentrated load. Handrail assemblies and guards shall be able to resist a single concentrated load of 200 pounds (0.89 kN), applied in any direction at any point along the top, and have attachment devices and supporting structure to transfer this loading to appropriate structural elements of the building. This load need not be assumed to act concurrently with the loads specified in the preceding paragraph.

1607*A*.7.1.2 Components. Intermediate rails (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds (0.22 kN) on an area equal to 1 square foot (0.093m^2), including openings and space between rails. Reactions due to this loading are not required to be superimposed with those of Section 1607*A*.7.1 or 1607*A*.7.1.1.

~~***1607A.7.1.3 Stress increase.*** *Where handrails and guards are designed in accordance with the provisions for allowable stress design (working stress design) exclusively for the loads specified in Section 1607A.7.1, the allowable stress for the members and their attachments are permitted to be increased by one-third.*~~

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SECTION 1614A - MODIFICATIONS TO ASCE 7

1614A.1 General. *The text of ASCE 7 shall be modified as indicated in sections 1614A.1.1 through 1614A.1.31.*

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1614A.1.3 ASCE 7, Table 12.2 -1. *Modify ASCE 7 Table 12.2-1 as follows:*

A. BEARING WALL SYSTEMS

14. Light-framed walls with shear panels of all other materials – Not permitted by OSHPD and DSA-SS.

B. BUILDING FRAME SYSTEMS

2. Steel eccentrically braced frames, non-moment-resisting connections at columns away from links - Not permitted by OSHPD.

4. Ordinary steel concentrically braced frames – Not permitted by OSHPD.

24. Light-framed walls with shear panels of all other materials – Not permitted by OSHPD and DSA-SS.

25. Buckling-restrained braced frames, non-moment-resisting beam-column connections – Not permitted by OSHPD.

27. Special steel plate shear wall – Not permitted by OSHPD.

C. MOMENT RESISTING FRAME SYSTEMS

2. Special steel truss moment frames – Not permitted by OSHPD.

3. Intermediate steel moment frames – Not permitted by OSHPD.

4. Ordinary steel moment frames – Not permitted by OSHPD.

Exception:

1) Systems listed in this section can be used as an alternative system when pre-approved by the enforcement agency.

2) Rooftop or other supported structures not exceeding two stories in height and 10 percent of the total structure weight can use the systems in this section when designed as components per ASCE 7 Chapter 13.

3) Systems listed in this section can be used for seismically isolated buildings when permitted by Section 1613A.6.2.

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NOTATION:

- *Authority: Health and Safety Code Section 130005(g) & 130021*
- *Reference: Health and Safety Code Section 1275, 129790, 129850 & 130005(g)*

Chapter 17*A* - Structural Tests and Special Inspections

1701*A*.1 Scope. The provisions of this chapter shall govern the quality, workmanship and requirements for materials covered. Materials of construction and tests shall conform to the applicable standards listed in this code.

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1704*A*.4 Concrete construction. The special inspections and verifications for concrete construction shall be as required by this section and Table 1704*A*.4.

TABLE 1704*A*.4 - REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD[a]	*CBC* REFERENCE
1. Inspection of reinforcing steel, including prestressing tendons, and placement.	—	X	ACI 318: 3.5, 7.1-7.7	1913*A.4*
2. Inspection of reinforcing steel welding in accordance with Table 1704*A*.3, Item 5b.	—	—	AWS D1.4 ACI 318: 3.5.2	—
3. Inspect bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased *or design is based on Section 1912A .*	X	—	*ACI 318: Appendix D*	1911*A*.5 , *1912A*
4. Verifying use of required design mix.	—	X	ACI 318: Ch. 4, 5.2-5.4	1904*A.2*.2, 1913*A*.2, 1913*A*.3
5. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	—	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	1913*A*.10
6. Inspection of concrete and shotcrete placement for proper application techniques.	X	—	ACI 318: 5.9, 5.10	1913*A*.6, 1913*A*.7, *1913A*.8
7. Inspection for maintenance of specified curing temperature and techniques.	—	X	ACI 318: 5.11-5.13	1913*A*.9
8. Inspection of prestressed concrete: a. Application of prestressing forces. b. Grouting of bonded prestressing tendons in the seismic-force-resisting system.	X X	—	ACI 318: 18.20 ACI 318: 18.18.4	—
9. Erection of precast concrete members.	—	X	ACI 318: Ch. 16	—
10. Verification of in-situ concrete strength, prior to stressing of tendons in posttensioned concrete and prior to removal of shores and forms from beams and structural slabs.	—	X	ACI 318: 6.2	—
11. Inspect formwork for shape, location and dimensions of the concrete member being formed.	—	X	ACI 318: 6.1.1	—
12. Post-installed anchors.	*X*	—	—	—

For SI: 1 inch = 25.4 mm.

a. Where applicable, see also Section 1707*A*.1, Special inspection for seismic resistance.

NOTATION:

- *Authority: Health and Safety Code Section 130005(g) & 130021*
- *Reference: Health and Safety Code Section 1275, 129790, 129850 & 130005(g)*

Chapter 18*A* - Soils and Foundations

1801*A*.1 Scope. The provisions of this chapter shall apply to building and foundation systems in those areas not subject to scour or water pressure by wind and wave action. Buildings and foundations subject to such scour or water pressure loads shall be designed in accordance with Chapter 16*A*.

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SECTION 1813A - PRESTRESSED ROCK AND SOIL FOUNDATION ANCHORS

1813A.1 General. *The requirements of this section address the use of vertical rock and soil anchors in resisting seismic or wind overturning forces resulting in tension on shallow foundations.*

1813A.2 Adoption. *Except for the modifications as set forth in Sections 1813A.3 and 1813A.4, all Prestressed Rock and Soil Foundation Anchors shall be designed in accordance with PTI Recommendations for Prestressed Rock and Soil Anchors.*

1813A.3 Geotechnical Requirements*. Geotechnical report for the Prestressed Rock & Soil Foundation Anchors shall address the following:*

1. *Minimum diameter and minimum spacing for the anchors including consideration of group effects.*
2. *Maximum unbonded length and minimum bonded length of the tendon.*
3. *Maximum recommended anchor tension capacity based upon the soil or rock strength / grout bond and anchor depth / spacing.*
4. *Allowable bond stress at the ground / grout interface and applicable factor of safety for ultimate bond stress.*
5. *Anchor axial tension stiffness recommendations at the anticipated anchor axial tension displacements, when required for structural analysis.*
6. *Minimum grout pressure for installation and post-grout pressure.*
7. *Class I Corrosion Protection is required for all permanent anchors. Geotechnical report shall specify the corrosion protection recommendations for temporary anchors.*
8. *Preproduction tests, Performance tests, Proof test and Creep test protocol, frequency and acceptance criteria. Performance test shall be at a minimum of 1.6 times the design loads. There shall be a minimum of two preproduction test anchors. Preproduction test anchors shall be tested to ultimate load or 0.80 times the specified minimum tensile strength of the tendon. A Creep test is required for all prestressed anchors with greater than 10 kips of lock-off prestressing load.*

9. *Lock-off prestressing load requirements.*

10. *Acceptable Drilling methods.*

11. *Geotechnical observation and monitoring requirements.*

1813A.4 Structural Requirements.

1. *Tendons shall be thread-bar anchors conforming to ASTM A 722.*

2. *The anchors shall be placed vertical.*

3. *Design Loads shall be based upon the load combinations in Section 1605A.3.1 and shall not exceed 60 percent of the specified minimum tensile strength of the tendons.*

4. *Ultimate Load shall be based upon Section 1614A.1.10 and shall not exceed 80 percent of the specified minimum tensile strength of the tendons.*

5. *The anchor shall be designed to fail in grout bond to the soil or rock before pullout of the soil wedge by group effect.*

6. *Foundation design shall incorporate the affect of lock-off loads.*

7. *Design shall account for as-built locations of soil anchors considering all the acceptable construction tolerances.*

8. *Design shall account for both short and long term deformation.*

9. *Enforcement agency may require consideration of anchor deformation in evaluating deformation compatibility or building drift where it may be significant.*

NOTATION:
- *Authority: Health and Safety Code Section 130005(g) & 130021*
- *Reference: Health and Safety Code Section 1275, 129790, 129850 & 130005(g)*

Chapter 22*A* – Steel

2201*A*.1 Scope. The provisions of this chapter govern the quality, design, fabrication and erection of steel used structurally in buildings or structures.

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2205A.4 [For OSHPD 1 & 4] MODIFICATIONS TO AISC 341

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2205A.4.1.5 Part I, Section 13. Special Concentrically Braced Frames (SCBF) modifications

2205A.4.1.5.1 Part I, 13.2 Members, Add a new section as follows.

AISC 341, 13.2f. Member Types

The use of rectangular HSS are not permitted for bracing members, unless filled solid with cement grout having a minimum compressive strength of 3000 psi at 28 days. The effects

of composite action in the filled composite brace shall be considered in the sectional properties of the system where it results in the more severe loading condition or detailing.

2205A.4.1.5.2 Part I, Section 13: Add Section 13.7 as follows.

13.7 Beam to Column Connections.

SCBF frames shall have moment-resisting beam-column connections that can resist a moment equal to the lesser of the available flexural strength of the beam or the column in the SCBF bays. The connection shall include CJP welds from the beam flanges to the column flange, or to a plate in the case of column weak axis connections.

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NOTATION:

- *Authority: Health and Safety Code Section 130005(g) & 130021*
- *Reference: Health and Safety Code Section 1275, 129790, 129850 & 130005(g)*

CHAPTER 34 - EXISTING STRUCTURES

3401.1 Scope. The provisions of this Chapter shall control the alteration, repair, addition and change of occupancy of existing structures*, including state-regulated structures in accordance with Sections 3401.1.1 and 3401.1.2.*

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SECTION 3403 - ADDITIONS, ALTERATIONS OR REPAIRS

3403.1 Existing buildings or structures. Additions or alterations to any building or structure shall comply with the requirements of the code for new construction. Additions or alterations shall not be made to an existing building or structure that will cause the existing building or structure to be in violation of any provisions of this code. An existing building plus additions shall comply with the height and area provisions of Chapter 5. Portions of the structure not altered and not affected by the alteration are not required to comply with the code requirements for a new structure.

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3403.2.3.3 Adoption [For OSHPD 2]: *All additions, alterations, repairs and seismic retrofit to the existing structures or portions thereof may be designed and constructed in accordance with the provisions of ~~FEMA 356~~ ASCE 41, as modified herein.*

3403.2.3.3.1 Referenced Standards. *All Reference Standards listed in ~~FEMA 356~~ ASCE 41 shall be replaced by Referenced Standards listed in Chapter 35 of this code and shall include all amendments to the reference standards in this code.*

3403.2.3.3.2 ~~FEMA 356~~ ASCE 41 Section ~~1.5~~ 1.4 – ~~Target Building Performance~~ Rehabilitation Objectives. *Target building performance level shall be Life Safety Building Performance Level (3-C) as defined in Section 1.5.3.3~~, with Structural performance level S-3 as defined in Section 1.5.1.3 and Non-structural performance level N-C as defined in Section 1.5.2.3.~~ at Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in section 1.6.1.2 for Occupancy Category II Structures and Building Safety Objective (BSO) Level as defined in Section 1.4.1 for Occupancy Category III Structures.*

3403.2.3.3.3 ~~FEMA 356~~ ASCE 41 Section 1.6 - Seismic Hazard. *~~The ground motion characterization shall be based on ground shaking having a 10 percent probability of exceedance in 50 years.~~*

~~*Ground shaking having a 10 percent probability of exceedance in 50 years need not exceed 2/3 of the maximum considered earthquake.*~~

Response spectra and acceleration time histories shall be constructed in accordance with sections 1613, 1802.7 & 1802.8.

3403.2.3.3.4 Analysis Procedure. *The selection of a particular analysis procedure from ~~FEMA 356~~ ASCE 41 may be subject to the approval of the enforcement agent.*

3403.2.3.3.5 Design Criteria. *Prior to implementation of ~~FEMA 356~~ ASCE 41 non-linear dynamic procedures – the ground motion, analysis and design methods, material assumptions and acceptance criteria proposed by the engineer shall be reviewed by the enforcement agent.*

~~***3403A.2.3.3.6 Enforcement Agency Approval.*** *The analysis, conclusion and design decisions shall be reviewed and accepted by enforcement agent.*~~

3403.2.3.3.6 ~~3403A.2.3.3.7~~ Structural observation, testing and inspections. *Construction testing, inspection and structural observation requirements shall be as required for new construction.* ……

NOTATION:

- *Authority: Health and Safety Code Section 130005(g) & 130021*
- *Reference: Health and Safety Code Section 1275, 129850 & 130005(g)*

Chapter 34A - Existing Structures

3401*A*.1 Scope. The provisions of this chapter shall control the alteration, repair, addition and change of occupancy of existing structures *for applications listed in Sections 110.1 (OSHPD 1), and 110.4 (OSHPD 4) regulated by the Office of Statewide Health Planning and Development (OSHPD).*…….

SECTION 3402*A* DEFINITIONS

3402*A*.1 Definitions. The following term shall, for the purposes of this chapter and as used elsewhere in the code, have the following meaning. *Definition provided in section 1613A.2, ASCE 7 section 11.2 and ~~Chapter 6 of Title 24 Part 1 - Building Standards Administrative Code~~ ASCE 41 shall apply when appropriate in addition to terms defined in this section*:

APPROVED EXISTING BUILDING*. Any building originally constructed in compliance with the requirements of 1973 or subsequent edition of California Building Code.*

ASSOCIATED STRUCTURAL ALTERATIONS *means any change affecting existing structural elements or requiring new structural elements for vertical or lateral support of an otherwise nonstructural alteration.*

~~***DESIGN*** *is the procedure that includes both the evaluation and retrofit design of an existing element and design of new element.*~~

~~***DESIGN EARTHQUAKE*** *is the earthquake ground motion defined in section 3413A.2.2.*~~

~~***ESSENTIAL LIFE SAFETY*** *is the retrofit or repair of a structure to a goal of essential life safety as a level of expected structural performance taken to mean that occupants will be able to exit the structure safely following an earthquake. It does not mean that they will be uninjured or not be in need of medical attention. A structure is presumed to achieve this level of performance where, although significant damage to the structure may have occurred, some margin against either total or partial structural collapse remains, even though damage may not be economical to repair; major structural elements have not become dislodged or fallen so as to pose a life-safety threat; and, nonstructural systems or elements, which are heavy enough to cause severe injuries either within or outside the building, have not become dislodged so as to pose a life-safety threat. This level of structural performance is equivalent to SPC-2.*~~

GENERAL ACUTE CARE HOSPITAL *as used in this chapter means a hospital building as defined in Section 129725 of the Health and Safety Code and that is also licensed pursuant to subdivision (a) of Section 1250 of the Health and Safety Code, but does not include these buildings if the beds licensed*

pursuant to subdivision (a) of Section 1250 of the Health and Safety Code, as of January 1, 1995, comprise 10 percent or less of the total licensed beds of the total physical plant, and does not include facilities owned or operated, or both, by the Department of Corrections. It also precludes hospital buildings that may be licensed under the above mentioned code sections, but provide skilled nursing or acute psychiatric services only.

INCIDENTAL STRUCTURAL ALTERATIONS OR ADDITIONS *are alterations or additions which would not reduce the story lateral shear force-resisting capacity by more than 5 percent or increase the story shear by more than 5 percent in any existing story.*

~~***IMMEDIATE OCCUPANCY -*** *The retrofit or repair of a structure to a goal of immediate occupancy as a level of expected performance is taken to mean the post-earthquake damage state in which limited structural and non-structural damage has occurred. The original strength and stiffness of structure is substantially retained, with minor cracking and yielding of structural elements. Basic access and life safety systems, including doors, stairways, elevators, emergency lighting, fire alarms and suppression systems, remain operable, provided that utilities are available. It is expected that occupants could safely remain in the building, although normal use may be impaired and some clean-up, inspection and limited structural and non-structural repairs may be required. This level of expected structural performance is equivalent to SPC-3 through SPC-5.~~

MAJOR STRUCTURAL ALTERATIONS OR ADDITIONS *are those alterations or additions of greater extent than minor structural alterations or additions.*

MINOR STRUCTURAL ALTERATIONS OR ADDITIONS *are alterations or additions of greater extent than incidental structural additions or alterations which would not reduce the story shear lateral-force-resisting capacity by more than 10 percent or increase base shear by more than 10 percent.*

NONREQUIRED STRUCTURAL ALTERATION *is any alteration of existing structural element or provision of new structural elements which is not necessary for vertical or lateral support of other work and is initiated by the applicant primarily for the purpose of increasing the vertical or lateral load-carrying strength or stiffness of an existing building.*

NONSTRUCTURAL ALTERATION *is any alteration which neither affects existing structural elements nor requires new structural elements for vertical or lateral support and which does not increase the lateral shear force in any story by more than 5 percent.*

NPC 1, NPC 2, NPC 3 / NPC 3R, NPC 4 and NPC 5 ~~***NONSTRUCTURAL PERFORMANCE CATEGORY (NPC)***~~ *are the building nonstructural performance categories for Hospital Buildings defined in Table 11.1of California Building Standards Administrative Code (Part 1, Title 24 CCR), Chapter 6.*

PEER REVIEW *refers to procedure contained in Section 3414A.*

PRIMARY FUNCTION. A primary function is a major activity for which the facility is intended. Areas that contain a primary function include, but are not limited to, the customer service lobby of a bank, the dining area of a cafeteria, the meeting rooms in a conference center, as well as offices and other work areas in which the activities of the public accommodation or other private entity using the facility are carried out. Mechanical rooms, boiler rooms, supply storage rooms, employee lounges or locker rooms, janitorial closets, entrances, corridors and restrooms are not areas containing a primary function.

RECONSTRUCTION *means rebuilding of any existing building to bring it into full compliance with these regulations.*

REPAIR *as used in this division means all the design and construction work affecting existing or requiring new structural elements undertaken to restore or enhance the structural and nonstructural load resisting system participating in vertical or lateral response of a structure primarily intended to correct the effects of deterioration or impending or actual failure, regardless of cause.*

SPC 1, SPC 2, SPC 3, SPC 4 and SPC 5 ~~***STRUCTURAL PERFORMANCE CATEGORY (SPC)***~~ *are the building structural performance categories for Hospital Buildings defined in Table 2.5.3 of California Building Standards Administrative Code (Part 1, Title 24 CCR), Chapter 6.*

TECHNICALLY INFEASIBLE. An alteration of a building or a facility that has little likelihood of being accomplished because the existing structural conditions require the removal or alteration of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.

SECTION 3403*A* ADDITIONS, ALTERATIONS OR REPAIRS

3403*A*.1 Existing buildings or structures. Additions or alterations to any building or structure shall comply with the requirements of the code for new construction. Additions or alterations shall not be made to an existing building or structure that will cause the existing building or structure to be in violation of any provisions of this code. An existing building plus additions shall comply with the height and area provisions of Chapter 5. Portions of the structure not altered and not affected by the alteration are not required to comply with the code requirements for a new structure.

3403*A*.1.1 Flood hazard areas. For buildings and structures in flood hazard areas established in Section 1612*A*.3, any additions, alterations or repairs that constitute substantial improvement of the existing structure, as defined in Section 1612*A*.2, shall comply with the flood design requirements for new construction, and all aspects of the existing structure shall be brought into compliance with the requirements for new construction for flood design.

3403*A*.2 Structural. Additions or alterations to an existing structure shall not increase the force in any structural element by more than 5 percent, unless the increased forces on the element are still in compliance with the code for new structures, nor shall the strength of any structural element be decreased to less than that required by this code for new structures. Where repairs are made to structural elements of an existing building, and uncovered structural elements are found to be unsound or otherwise structurally deficient, such elements shall be made to conform to the requirements for new structures.

3403*A*.2.1 Existing live load. Where an existing structure heretofore is altered or repaired, the minimum design loads for the structure shall be the loads applicable at the time of erection, provided that public safety is not endangered thereby.

3403*A*.2.2 Live load reduction. If the approved live load is less than required by Section 1607A, the areas designed for the reduced live load shall be posted in with the approved load. Placards shall be of an approved design.

3403*A*.2.3 Seismic. Additions, alterations or modification or change of occupancy of existing buildings shall be in accordance with this section for the purposes of seismic considerations.

3403*A*.2.3.1 Additions to existing buildings. An addition that is structurally independent from an existing structure shall be designed and constructed with the seismic requirements for new structures. An addition that is not structurally independent from an existing structure shall be designed and constructed such that the entire structure conforms to the seismic-force-resistance requirements for new structures unless the following conditions are satisfied:

1. The addition conforms with the requirements for new structures,
2. The addition does not increase the seismic forces in any structural element of the existing structure by more than *5* percent cumulative since the original construction, unless the element has the capacity to resist the increased forces determined in accordance with ASCE 7, and
3. Additions do not decrease the seismic resistance of any structural element of the existing structure by more than *5* percent cumulative since the original construction, unless the element has the capacity to resist the forces determined in accordance with ASCE 7. If the building's seismic base shear capacity has been increased since the original construction, the percent change in base shear may be calculated relative to the increased value.

3403*A*.2.3.2 Alterations. Alterations are permitted to be made to any structure without requiring the structure to comply with Section 1613A, provided the alterations conform to the requirements for a new structure. Alterations that increase the seismic force in any existing structural element by more than *5* percent cumulative since the original construction or decrease the design strength of any existing structural element to resist seismic forces by more than 5 percent cumulative since the original construction shall not be permitted unless the entire seismic-force-resisting system is determined to conform to ASCE 7 for a new

structure. If the building's seismic base shear capacity has been increased since the original construction, the percent change in base shear may be calculated relative to the increased value.

Exception: Alterations to existing structural elements or additions of new structural elements that are not required by ASCE 7 and are initiated for the purpose of increasing the strength or stiffness of the seismic-force-resisting system of an existing structure need not be designed for forces conforming to ASCE 7, provided that an engineering analysis is submitted indicating the following:

1. The design strength of existing structural elements required to resist seismic forces is not reduced.
2. The seismic force to required existing structural elements is not increased beyond their design strength.
3. New structural elements are detailed and connected to the existing structural elements as required by Chapter 16A.
4. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required by Chapter 16A.
5. The alterations do not create a structural irregularity as defined in ASCE 7 or make an existing structural irregularity more severe.
6. The alterations do not result in the creation of an unsafe condition.

3403A.2.3.3 Adoption. *Except for the modifications as set forth in Sections 3411A through 3413A ~~3414A~~ all additions, alterations, repairs and seismic retrofit to existing structures or portions thereof may be designed and constructed in accordance with the provisions of ~~FEMA 356~~ ASCE 41.*

3403A.2.3.3.1 Referenced Standards. *All Reference Standards listed in ~~FEMA 356~~ ASCE 41 shall be replaced by Referenced Standards listed in Chapter 35 of this code and shall include all amendments to the reference standards in this code.*

3403A.2.3.3.2 ASCE 41 Section 1.4 –Rehabilitation Objectives. *Target building performance level shall be as follows:*

a. ***For general acute care hospitals along with all structures required for their continuous operation and access*** *- Immediate Occupancy Structural Performance Level (S-1) as defined in Section 1.5.1.1 at Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in Section 1.6.1.2 and Collapse Prevention Structural performance level (S-5) per Section 1.5.1.5 at Basic Safety Earthquake 2 (BSE-2) Seismic Hazard Level as defined in Section 1.6.1.1. The nonstructural performance level shall satisfy the requirements of this code for new hospital buildings.*

   Exceptions: *Buildings satisfying requirements of Sections 3403A.2.3.4, 3411A.2 or 3411A.3.*

b. ***For pre-1973 Buildings which will not be used for general acute care services after January 1, 2030*** *- Building Safety Objective (BSO) Level as defined in Section 1.4.1. BSO level includes Life Safety Building Performance (3-C) Level as defined in Section 1.5.3.3 at the Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in section 1.6.1.2 and Collapse Prevention building performance level (5-E) per section 1.5.3.4 at the Basic Safety Earthquake 2 (BSE-2) Seismic Hazard Level as defined in section 1.6.1.1.*

   Exceptions: *Buildings satisfying requirements of Sections 3403A.2.3.4, 3411A.3.2.1 and 3411A.3.2.2.*

c. ***All Others*** *- Immediate Occupancy Building Performance Level of (1-B) as defined in Section 1.5.3.2 at Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in Section 1.6.1.2 and Collapse prevention building performance level (5-E) per Section 1.5.3.4 at Basic Safety Earthquake 2 (BSE-2) Seismic Hazard Level as defined in Section 1.6.1.1.*

3403A.2.3.3.3 ~~3403A.2.3.3.2~~ Material Testing Required. *Use of Material Properties based on Historical Information as default values shall not be permitted.*

3403A.2.3.3.4 ~~3403A.2.3.3.3~~ Analysis Procedure. *The selection of a particular analysis procedure from ~~FEMA 356~~ ASCE 41 shall be subject to the approval of the enforcement agent.*

3403A.2.3.3.5 ~~***3403A.2.3.3.4***~~ ***Design Criteria.*** *Prior to implementation of ~~FEMA 356~~ ASCE 41 Nonlinear Dynamic Procedure, the ground motion, analysis and design methods, material assumptions and acceptance criteria proposed by the engineer shall be peer reviewed in accordance with Section 3414A and ~~/ or~~ reviewed by the enforcement agent.*

~~***3403A.2.3.3.5 Enforcement Agency Approval.*** *The analysis, conclusion and design decisions shall be reviewed and accepted by the peer reviewer(s) and / or enforcement agent.*~~

3403A.2.3.3.6 Structural observation, testing and inspections. *Construction testing, inspection and structural observation requirements shall be as required for new construction.*

3403A.2.3.4 Seismic Evaluation and Retrofit of General Acute Care Hospitals*. Not withstanding any other requirements of this code, all existing general acute care hospitals shall comply with the requirements specified in Chapter 6, Part 1,Title 24.*

3403A.2.3.4.1 SPC5 and NPC 4 / NPC5. *Structures and nonstructural components and systems satisfying the requirements of this Code for new buildings for Occupancy Category IV shall be considered to satisfy the requirements of SPC 5 and NPC 4. NPC 4 buildings satisfying operational requirements for NPC 5 of Table 11.1, Chapter 6, Part 1, Title 24, shall be placed in non-structural performance category NPC 5.*

3403A.2.3.4.2 SPC 5 using ASCE 41. *Structures satisfying the requirements of immediate occupancy structural performance level (S-1) per Section 1.5.1.1 of ASCE 41 at BSE-1, Collapse prevention performance level S-5 per section 1.5.1.5 of ASCE 41 at BSE-2 and items identified in Chapter 10, Part 1, Title 24, satisfying the requirements of Immediate Occupancy Nonstructural performance level (N-B) per section 1.5.2.2 of ASCE 41 at BSE-1 shall be considered to comply with SPC 5 requirements of Table 2.5.3, Chapter 6, Part 1, Title 24.*

3403A.2.3.4.3 SPC 2 using ASCE 41. *Structures satisfying the requirements of life safety structural performance level (S-3) per section 1.5.1.3 of ASCE 41 at BSE-1 and items identified in Chapter 10, Title 24, Part 1 satisfy the requirements of life safety Nonstructural performance level (N-C) per section 1.5.2.3 of ASCE 41 at BSE-1, shall be considered to comply with SPC 2 requirements of Table 2.5.3, Chapter 6, Part 1, Title 24.*

3403A.2.4.4 NPC. *Non-structural components for Immediate Occupancy Nonstructural performance level (N-B) in section 1.5.2.2 shall meet the requirements of this Code for new buildings. Non-structural components for Operational Nonstructural performance level (N-A) in section 1.5.2.1 shall meet performance level N-B and Section 3413A.1.30. Building satisfying the requirements of non-structural performance level N-A and N-B as described in this section shall be considered to satisfy the requirements of NPC 5 & NPC 4 of Table 11.1, Chapter 6, Part 1, Title 24 respectively.*

Immediate Occupancy Nonstructural performance level (N-B) in Section 1.5.2.2 and Life Safety Nonstructural performance level (N-C) in section 1.5.2.3 of ASCE 41 at BSE-1 shall be considered equivalent to NPC 3 / NPC 2 and NPC 3R requirements respectively of Table 11.1, Chapter 6, Part 1, Title 24. For NPC 3 / NPC 3R / NPC 2, only components listed in Table 11.1, Chapter 6, Part 1, Title 24,for NPC 3 / NPC 3R / NPC 2 need to satisfy the requirements specified above.

> *Exceptions: 1) Evaluation procedure in Article 11, Chapter 6, Part 1, Title 24 shall be used for seismic evaluation of NPC 2, NPC 3 / NPC 3R, NPC 4 and NPC 5, where specific procedure is not outlined in ASCE 41. Administrative and permitting provisions outlined in Article 11, Chapter 6, Part 1, Title 24 shall apply.*
>
> *2) Anchorage and bracing of nonstructural components in buildings in seismic performance categories SPC 1 and SPC 2 with a performance level of NPC 3R may comply with the provisions of Section 1630A of the 1995 California Building Code using an importance factor I_p=1.0. The capacity of welds, anchors and fasteners shall be determined in accordance with requirements of this Code.*
>
> *3) Anchorage and bracing of nonstructural components in buildings in seismic performance categories SPC 1 or SPC 2 with a performance level of NPC 3 or higher, and SPC 3 or SPC 4, may comply with the provisions of Section 1630B of the 1998 California Building Code using an*

importance factor Ip=1.5. The capacity of welds, anchors and fasteners shall be determined in accordance with requirements of this code.

A continuous load path of sufficient strength and stiffness between the component and the supporting structure shall be verified. Local elements of the supporting structure shall be verified for the component loads where they control the design of the elements or their connections. Increases in F_p due to anchorage conditions (for example shallow anchors) need not be considered. For NPC 3R, the adequacy of load path for nonstructural elements need only be verified when the total reaction at the point of support (including the application of F_p) exceeds the following limits:

1. *250 pounds for components or equipment attached to light frame walls. For the purposes of this requirement, the sum of the absolute value of all reactions due to component loads on a single stud shall not exceed 250 pounds.*
2. *1,000 pounds for components or equipment attached to roofs, or walls of reinforced concrete or masonry construction.*
3. *2,000 pounds for components or equipment attached to floors or slabs-on-grade.*

***Exception:** If the anchorage or bracing is configured in a manner that results in significant torsion on a supporting structural element, the effects of the nonstructural reaction force on the structural element shall be considered in the anchorage design.*

***3403A.2.3.5 Repair of Earthquake Damage.** Repair of Earthquake Damage shall comply with Article 20, Chapter 7, Part 1, Title 24,.*

…….

SECTION 3411A - ADDITIONS, ALTERATIONS, REPAIRS AND SEISMIC RETROFIT TO EXISTING BUILDINGS OR STRUCTURES

Existing hospital buildings (as defined in Section 7-111 Part 1, Title 24, Building Standards Administrative Code).

***NOTE:** Alterations to lateral shear force-resisting capacity and story lateral shear forces shall be considered to be cumulative for purposes of defining incidental or minor alterations or additions. The percentage of cumulative changes shall be based on as built conditions existing on March 7, 1973 or since the original construction if built after March 7, 1973.*

***3411A.1 Alterations.** For this section, alterations include any additions, alterations, repairs, and / or seismic retrofit to a hospital building or portions thereof. The provision of Section 3403A shall apply for Hospital Buildings.*

***3411A.2 Seismic Retrofit.** Any seismic retrofit of hospital building required by Article 2 and Article 11, Chapter 6, Part 1, Title 24, shall meet the requirements of Sections 3403A.2.3.4. ~~3412A through 3414A~~.*

***EXCEPTION:** Hospital buildings evaluated to SPC 1 due to deficiencies identified by Article 10, Chapter 6, Part 1, Title 24, may be upgraded to SPC 2 by altering, repairing or seismically retrofitting these conditions in accordance with the requirements of Sections 3403A.2.3.~~,3412A through 3414A.~~*

3411A.3 Alterations, additions and repairs to existing buildings or structures not required by Chapter 6, Part 1, Title 24.

***3411A.3.1 Approved existing buildings.** Structural alterations or repairs may be made to approved building provided the entire building, as modified, including structural alterations or repairs, conform to Sections 3403A.2.3, ~~3412A through 3414A~~ except that requirements for the seismic structural performance category (SPC) of the building as determined by Chapter 6, Part 1, Title 24 shall apply. Additions shall conform to the requirements of these regulations for new construction.*

3411A.3.2 Pre-1973 buildings.

***3411A.3.2.1 Incidental structural alterations, additions or repairs.** The existing structural elements affected by the alteration, addition or repair shall conform or shall be made to conform to the vertical load*

requirements of these regulations. Incidental structural additions will be permitted provided the additions meet these regulations for new construction using importance factor, I, equal to or greater than 1.0. Alterations or repairs to the existing lateral load-resisting system must meet the requirements of Sections 3403A.2.3.~~, 3412A through 3414A.~~

3411A.3.2.2 Minor structural alteration, additions or repairs. *Minor structural alterations, additions or repairs shall be permitted provided they meet the following: Alterations to existing gravity and / or lateral load-resisting systems shall be made to conforms to the requirements of Sections 3403A.2.3, ~~3412A through 3414A~~; and ~~or~~ additions shall meet all of the requirements of these regulations for new construction using an importance factor, I, equal to or greater than 1.0.*

3411A.3.2.3 Major structural alteration, additions or repairs. *Major structural alterations, additions or repairs shall be permitted provided the entire building, as modified, including the structural alterations or repairs, conforms to the requirements of Sections 3403A.2.3. ~~3403A, 3412A through 3414A for no less than SPC 2~~. Additions shall meet the requirements of these regulations for new construction.*

It shall also be demonstrated by a written report submitted by the structural engineer, acceptable to the enforcement agency, that an investigation of the existing building structure shows it to be constructed in a reasonable conformance with the submitted drawings and specifications.

3411A.3.2.4 Removal of Stories*. An alteration which involves the removal of one or more entire stories will be permitted if the lateral-load-resisting capacity of the remaining structure is not reduced.*

An alteration which involves the removal of other than one or more entire stories will be permitted provided that entire building conforms to ~~in accordance with~~ Section~~s~~ 3403A.2.3.~~, 3412A through 3414A~~.

SECTION 3412A RESERVED ~~EARTHQUAKE EVALUATION AND DESIGN FOR RETROFIT OF EXISTING HOSPITAL BUILDINGS~~

~~***3412A.1 Purpose.*** *All modifications, alterations, and / or repairs to existing structures or portions thereof shall, at a minimum, be designed and constructed to resist the effects of seismic ground motions as provided in this section. When applicable, the structural system shall be evaluated by the design professional of record and, if not meeting or exceeding the minimum seismic design requirements of this section, shall be retrofitted in compliance with these requirements.*~~

~~***3412A.1.1 Minimum seismic design.*** *The purpose of this section is to provide a minimum level of seismic performance. At this essential life safety level (seismic performance category, SPC - 2), in general, persons in and around the building will be able to safely exit or be evacuated from the building or its vicinity following an earthquake. It does not mean that persons will not be injured or not be in need of medical attention. This level of seismic performance is presumed to be achieved when a) the building has some margin against either total or partial collapse of the structural system even though significant damage may have occurred that may not be economical to repair; b) major structural elements have not fallen or been dislodged so as to pose a life-safety threat; and c) nonstructural systems or elements that are heavy enough to cause severe injuries either within or outside the building have not been dislodged so as to pose a life-safety threat. For buildings in seismic performance categories SPC- 3 through SPC – 5, the purpose of this section is to provide the immediate occupancy level of seismic performance. At this level, the building and essential non-structural systems will be reasonably capable of functioning following an earthquake.*~~

~~***3412A.2 Applicability***~~

~~***3412A.2.1*** *The requirements of this section apply to hospital building where Chapter 6, Part 1, Title 24 Building Standard Administrative Code, so requires , wherever the structure is to be retrofitted, repaired, or modified and; 1) there is change in occupancy; or 2) changes to structural elements that reduce the lateral load capacity by more than 5% at any story; or 3) repair of structural elements where the damage has reduced the lateral load capacity by more than 10% at any story; or 4) changes in live or dead load that increase the story shear by more than 5%; or 5) where required by Sections 3403A, 3411A or Chapter 6, Part 1, Title 24, Building Standard Administrative Code. Changes in items 2), 3), and 4) are cumulative for past alterations to the building.*~~

~~*Where items 1 through 5 are not applicable, the alteration, retrofit or repair shall meet the requirements of this section, but upgrade of the whole structure is not required.*~~

~~***3412A.2.2 Evaluation required.*** *If the criteria in Section 3412A.2.1 apply to the project under consideration, the design professional of record shall provide an evaluation in accordance with FEMA 356, as modified herein, to determine the seismic performance of the building in its current configuration and condition. If the structure seismic performance is evaluated as satisfactory and enforcement agent concur, then no structural retrofit is required.~~

> ~~***EXCEPTION:*** *In some cases a technical review and evaluation may be waived under the exception of Section 3413A.1, where the life safety threat posed by building is clearly minimal.~~

~~***3412A.2.3 Retrofit required.*** *Where the evaluation indicates the building does not meet the SPC performance objective of this section, the owner shall take appropriate steps and either 1) undertake the seismic retrofit as part of the modifications, alterations and / or repairs; or 2) provide a plan, acceptable to the enforcement agent, to complete the seismic retrofit in a timely manner.~~

~~***3412A.3*** *The modification to any existing building may be prepared in accordance with the requirements of a new building in this Code.~~

~~***3412A.4*** *The structural system allowances of Sections 3403A.2.1 & 3403A.2.2 do not apply to any building to which Sections 3411A through 3414A apply.~~

SECTION 3413A ~~SEISMIC REHABILITATION OF BUILDINGS~~ <u>MODIFICATIONS TO ASCE 41</u>

3413*A.1 GENERAL.* ~~*The existing or retrofitted structure shall be demonstrated to have the capability to sustain the deformation response due to the specified earthquake ground motions. The engineer shall provide an evaluation of the response of the existing structure in its current configuration and condition to the ground motions specified. If the building's seismic performance is evaluated as satisfactory and the enforcement agent concurs, then no further engineering work is required. When the evaluation indicates the building does not meet the objective of safety goals of this chapter and the applicable structural seismic performance (SPC) and nonstructural seismic performance (NPC) requirements, then a retrofit and / or repair design shall be prepared that yields a structure that meets the life-safety and operational performance objectives of Section 3412A and reflects the appropriate consideration of existing conditions. Any approach to analysis and design may be used that yields a building of reliable stability in the prescribed design earthquake loads and conditions. The approach shall be rational, shall be consistent with the established principals of mechanics, and shall use the known performance characteristics of materials and assemblages under reversing loads typical of severe earthquake ground motions.~~*

> ~~***EXCEPTION:*** *Further consideration of the structure's seismic performance can be waived by the Enforcement Agent if both the engineer of record and Enforcement Agent conclude that the structural system can be expected to perform at least as well as required by the provisions of Section 3403A, 3412A through 3414A without completing an analysis of the structure's conformance to these requirements. A detailed report shall be submitted to the responsible Enforcement Agent that presents the reasons and basis for this conclusion. This report shall be prepared by the engineer of record. Enforcement Agent shall concur in this conclusion and affirm to it in writing.~~

3413*A.2 Modifications to FEMA 356.* ~~*This section is applicable to seismic evaluation, analysis and design using the provisions of FEMA 356 per section 3403A.2.3.3.*~~ *The text of ~~FEMA 356~~ <u>ASCE 41</u> shall be modified as indicated in sections ~~3413A.2.1~~ <u>3413A.1.1</u> through ~~3413A.2.37~~ <u>3413A.1.32.</u>*

<u>Reference to sections of International Building Code (IBC) in ASCE 41 shall comply with requirements of Sections 110.1 & 110.4.</u>

<u>3413A.1.1 ASCE 41 Section 1.1.</u> *<u>Modify ASCE 41 Section 1.1 with the following:</u>*

<u>Seismic evaluations shall be performed using procedure and criteria of ASCE 41 except for general acute care hospitals, which shall be evaluated per Chapter 6, Part 1, Title 24 when required per provision of that chapter.</u>

~~***3413A.2.1 FEMA 356 Sections 1.3, 1.4, 1.5.*** *Replace FEMA 356 Sections 1.3, 1.4 and 1.5 as follows:~~

Seismic Rehabilitation Process and Objective. *Seismic evaluation procedure, building performance level and rehabilitation objectives for Hospital Buildings shall be per California Building Standards Administrative Code (Part 1, Title 24 CCR), Chapter 6.*

3413A.2.2 3413A.1.2 FEMA 356 ASCE 41 Section 1.6 Seismic Hazard. *Replace FEMA 356 Modify ASCE 41 Section 1.6 with the Following:*

The ground motion characterization shall be based on ground shaking having a 10 percent probability of exceedance in 50 years for category SPC-2 at the essential life-safety performance level. For SPC-3 through SPC-5, the ground motion characterization shall be based on ground shaking having a 10 percent probability of exceedance in 50 years at the immediate occupancy performance level and the maximum considered earthquake at the collapse prevention performance level.

Ground shaking having a 10 percent probability of exceedance in 50 years need not exceed 2/3 of the maximum considered earthquake.

Response spectra and acceleration time histories shall be constructed in accordance with Sections 1613A, 1614A and 1802A.6. Basic Safety Earthquake 2 (BSE-2) in ASCE 41 shall be same as Maximum Considered Earthquake (MCE) in ASCE 7.

3413A.2.3 3413A.1.3 FEMA 356 ASCE 41 Section 2.2.6. *Modify FEMA 356 ASCE 41 Section 2.2.6 with the Following:*

Data Collection Requirements. *The extent of data collection shall be at Usual level for SPC-2 and Comprehensive level for all structures except that data collection at Usual level shall be permitted for structures with BSO or lower target performance objective. SPC-3 through SPC-5 per FEMA 356 Table 2-1. Materials properties testing program shall be pre-approved by the Enforcement Agent.*

For building, built under an OSHPD permit based on 1976 or later edition of CBC, where materials properties are shown on design drawings and original materials test data are available, no materials testing shall be required when approved by the enforcement agent.

3413A.2.4 3413A.1.4 FEMA 356 ASCE 41 Section 2.4.1.1. *Modify FEMA 356 ASCE 41 Section 2.4.1.1 with the Following:*

Method to Determine Limitations on Use of Linear Procedures. *The applicability of linear procedures shall be determined as follows:*

- *If all component DCRs ≤ 1.5 for SPC-3 through 5 buildings or 2.0 for SPC-2 buildings, then linear procedures are applicable.*
- *If up to 10% of the component DCRs exceeds 1.5 and no irregularities described in Sections 2.4.1.1.1 through 2.4.1.1.4 are present, then linear procedures are applicable.*

3. *If one or more component DCRs exceed 1.5 for the Immediate Occupancy Structural Performance Level (S-1) or 2.0 for the Life Safety Structural Performance level (S-3) and any irregularity described in Section 2.4.1.1.1 through 2.4.1.1.4 is present, then linear procedures are not applicable and shall not be used.*
4. *Linear procedures are not applicable to moment resisting frames where plastic hinges do not form in either the beam at the face of column or in the column panel zone.*

3413A.2.5 3413A.1.5 FEMA 356 ASCE 41 Section 2.4.2.1 *Modify FEMA 356 ASCE 41 Section 2.4.2.1 with the following:*

Nonlinear Static Procedure. *If higher mode effects are significant, either the Nonlinear Dynamic Procedure or Modal Pushover Analysis procedure, subject to the approval of the enforcement agent, shall be used.*

3413A.2.6 3413A.1.6 FEMA 356 ASCE 41 Section 2.4.4.5. *Modify FEMA 356 ASCE 41 Section 2.4.4.5 by the Following:*

Material Properties. *Expected material properties are not permitted to be determined by multiplying lower bound values by the assumed factors specified in Chapters 5 through 8.-*

~~3413A.2.7~~ 3413A.1.7 ~~FEMA 356~~ ASCE 41 Section 3.2.10.1. *Modify ~~FEMA 356~~ ASCE 41 Section 3.2.10.1 with the Following:*

Linear Procedures. *Equation ~~3-6~~ 3-5 is not permitted by OSHPD.*

~~***3413A.2.8 FEMA 356 Section 3.3.1.3.1.*** *Modify FEMA 356 Section 3.3.1.3.1 by the Following:~~

~~***Pseudo Lateral Load.***~~

~~*C_2 = Modification factor to represent the effects of pinched hysteresis shape, stiffness deterioration and strength deterioration on maximum displacement response. Values of C_2 for different framing systems and Structural Performance Levels shall be obtained from Table 3-3. For linear procedures, C_2 may be taken as 1.0 if all DCRs are less than 1.5.*~~

~~***3413A.2.9*** ***3413A.1.8*** ***FEMA 356*** ***ASCE 41*** **Section 3.3.1.3.5.** Replace ~~FEMA 356~~ ASCE 41 Section 3.3.1.3.5 as follows:*

Unreinforced Masonry Buildings. *Unreinforced Masonry not permitted by OSHPD.*

3413A.1.9 ASCE 41 Section 3.3.3.2.2 *Modify ASCE 41 Section 3.3.3.2.2 with the following:*

Simplified NSP Analysis. *Not permitted by OSHPD.*

~~***3413A.2.10 FEMA 356 Section 3.3.3.2.4.*** *Modify FEMA 356 Section 3.3.3.2.4 by the Following:~~

~~***Idealized Force-Displacement Curve.*** *The effective yield strength, V_y, and yield displacement of the building shall not be used to determine acceptance criteria based on displacement ductility or strength beyond the provisions without approval of the enforcement agent.*~~

~~***3413A.2.11 FEMA 356 Section 3.3.3.3.2.*** *Modify FEMA 356 Section 3.3.3.3.2 by the Following:~~

~~***Target Displacement.***~~

~~*C_2 = Modification factor to represent the effects of pinched hysteresis shape, stiffness deterioration and strength deterioration on maximum displacement response. Values of C_2 for different framing systems and Structural Performance Levels shall be obtained from Table 3-3.*~~

~~***3413A.2.12 FEMA 356 Table 3-3.*** *Modify FEMA 356 Table 3-3 by the Followings:~~

~~***Values for Modification Factor C_2.***~~
~~*Footnote 1. Structures in which more than 30% of the story shear at any level is resisted by any combination of the following components, elements, or frames: ordinary moment resisting frames, concentrically braced frames, frames with partially restrained connections, tension-only braces, unreinforced masonry walls, shear-critical piers and spandrels of reinforced concrete or masonry, flexurally controlled reinforced concrete and masonry walls without boundary elements and welded steel special moment resisting frames with Pre-Northridge connections.*~~

~~3413A.2.13~~ 3413A.1.10 ~~FEMA 356~~ ASCE 41 Section 3.4.2.2. *Modify ~~FEMA 356~~ ASCE 41 Section 3.4.2.2 with the Following:*

Acceptance Criteria for Linear Procedures – Drift Limitations. *The interstory drift ratio shall not exceed the ~~following values for the specified systems for the performance level under consideration~~ drift limits for Occupancy Category IV in ASCE 7 Table 12.12-1due to forces corresponding to BSE-1, except that buildings designed to BSO or lower performance levels are permitted to meet the drift limits for Occupancy Category II. For dual systems, the least interstory drift ratio shall control.*

> ***EXCEPTION:*** *Larger interstory drift ratios shall be permitted where justified by rational analysis that both structural and non-structural elements can tolerate such drift and approved by the enforcement agent.*

~~***Seismic Force***~~	~~***IO***~~	~~*LS*~~	~~*CP*~~

~~***Resisting System***~~			
~~*Moment Frames*~~	~~*0.015*~~	~~*0.020*~~	~~*0.025*~~
~~*Braced Frames*~~	~~*0.010*~~	~~*0.015*~~	~~*0.020*~~
~~*Shear Walls*~~	~~*0.007*~~	~~*0.010*~~	~~*0.015*~~

~~3413A.2.14~~ 3413A.1.11 ~~FEMA 356~~ ASCE 41 Section 3.4.3.2.1. *Modify ~~FEMA 356~~ ASCE 41 Section 3.4.3.2.1 with the following:*

Deformation-Controlled Actions. *For any building required to meet the ~~SPC-3 through SPC-5~~ Operational Building Performance level, 1-A or Immediate Occupancy Building Performance Level, 1-B, primary components shall be within the acceptance criteria for primary components and secondary components shall be within the acceptance criteria for secondary components.*

~~3413A.2.15~~ 3413A.1.12 ~~FEMA 356~~ ASCE 41 Section 4.4. *Modify ~~FEMA 356~~ ASCE 41 Section 4.4 with the followings:*

Foundation Strength and Stiffness. *Foundation and soil strength shall be used to evaluate potential overturning, uplift and sliding for fixed base assumptions, and stiffness for flexible base assumptions, including deformations associated with those actions.*

~~3413A.2.16~~ 3413A.1.13 ~~FEMA 356~~ ASCE 41 Section 4.4.1.1. *Replace ~~FEMA 356~~ ASCE 41 Section 4.4.1.1 as follows:*

Presumptive Capacities. *Not permitted by OSHPD*

~~3413A.2.17~~ 3413A.1.14 ~~FEMA 356~~ ASCE 41 Section 4.4.1.2. *Replace ~~FEMA 356~~ ASCE 41 Section 4.4.1.2 as follows:*

Prescriptive Expected Capacities. *Not permitted by OSHPD.*

~~3413A.2.18~~ 3413A.1.15 ~~FEMA 356~~ ASCE 41 Section 4.4.3.2.2. *Modify ~~FEMA 356~~ ASCE 41 Section 4.4.3.2.2 with the following:*

Flexible Base Assumption. *The soil strength shall be evaluated.*

~~3413A.2.19~~ 3413A.1.16 ~~FEMA 356~~ ASCE 41 Section 4.5. *Modify ~~FEMA 356~~ ASCE 41 Section 4.5 with the following:*

Seismic Earth Pressure. *Where the grade difference from one side of the building to another exceeds one-half story height, the seismic increment of earth pressure shall be added to the gravity lateral earth pressure to evaluate the building overturning and sliding stability and the lateral force resisting system below grade in combination with the building seismic forces .*

~~3413A.2.20~~ 3413A.1.17 ~~FEMA 356~~ ASCE 41 Table 5.6. *Modify ~~FEMA 356~~ ASCE 41 Table 5.6 with the following:*

Acceptance Criteria for Nonlinear Procedures - Structural Steel Components.
For fully and partially restrained moment connections designed to 1989 or prior edition of Part 2, Title 24 shall be verified for the presence of welds using E70T-4 electrodes. Where E70T-4 electrodes are present, the plastic rotation angles and residual strength ratios used shall be substantiated by the statistical analysis of three or more applicable cyclic test results subject to the approval of the enforcement agent. ~~, except when connections satisfy requirements of AISC 358.~~

~~3413A.2.21~~ 3413A.1.18 ~~FEMA 356~~ ASCE 41 Section ~~6.8.1.1~~ 6.7.1.1. *Modify ~~FEMA 356~~ ASCE 41 Section ~~6.8.1.1~~ 6.7.1.1 with the following:*

Monolithic Reinforced Concrete Shear Walls and Wall Segments. *For nonlinear procedures, shear walls or wall segments with axial loads greater than 0.35 P_o shall be included in the model as primary elements with appropriate strength and stiffness degrading properties assigned to those components subject to the approval of the enforcement agent. For linear procedures, the effects of deformation compatibility shall be investigated using moment-curvature section analyses and cyclic testing results of similar components to*

determine whether strengthening is necessary to maintain the gravity load carrying capacity of that component.

~~3413A.2.22 FEMA 356 Section 6.8.2.3 6.7.2.3.~~ *~~Modify FEMA 356 Section 6.8.2.3 6.7.2.3 with the following:~~*

~~Strength.~~ *~~The effective tension and compression flange widths for shear walls or wall segments shall be taken as one half of the distance to the next wall web or 25% of the total wall height, whichever is less.~~*

~~3413A.2.23~~ 3413A.1.19 ~~FEMA 356~~ ASCE 41 Section ~~7.4.2~~ 7.3.2. *Replace ~~FEMA 356~~ ASCE 41 Section ~~7.4.2~~ 7.3.2 as follows:*

Unreinforced Masonry Walls and Piers In-plane. *Not permitted by OSHPD.*

~~3413A.2.24~~ 3413A.1.20 ~~FEMA 356~~ ASCE 41 Section ~~7.4.3~~ 7.3.3. *Replace ~~FEMA 356~~ ASCE 41 Section ~~7.4.3~~ 7.3.3 as follows:*

Unreinforced Masonry Walls Out-of-plane. *Not permitted by OSHPD.*

~~3413A.2.25~~ 3413A.1.21 ~~FEMA 356~~ ASCE 41 ~~7.4.4.2.2~~ 7.3.4.2.2. Shear Strength of Walls and Piers. *Modify ~~FEMA 356~~ ASCE 41 Section ~~7.4.4.2.2~~ 7.3.4.2.2 with the following:*

The spacing of shear reinforcing, S, shall be less than or equal to the wall pier clear height divided by 2 or the story height divided by 2, whichever is smaller.

~~3413A.2.26 FEMA 356 Section 8.3.2.5.~~ *~~Modify FEMA 356 Section 8.3.2.5 with the following:~~*

~~Default Properties.~~ *~~Component construction in the building shall be verified to meet the material properties, including fastener size and spacing used in the test assemblies establishing the expected strength and stiffness values given in Tables 8-1 and 8-2.~~*

~~3413A.2.27 FEMA 356 Sections 8.5.4.3, 8.5.5.3, 8.5.6.3, 8.5.7.3, 8.5.8.3. 8.5.9.3, 8.5.10.3, 8.5.11.3, 8.5.12.3, 8.5.13.3, 8.5.14.3, 8.5.15.3, 8.5.16.3, 8.5.17.3, 8.6.3.3, 8.6.4.3, 8.6.5.3, 8.6.6.3, 8.6.7.3, 8.6.8.3, 8.6.9.3, 8.6.10.3, 8,7.2, 8.8.1.3.~~ *~~Modify FEMA 356 Sections listed by the following:~~*

~~Acceptance Criteria.~~ *~~Component construction in the building shall be verified to meet the material properties, including fastener size and spacing used in the test assemblies establishing the m-factors and displacement ductility values given in Tables 8-3 and 8-4.~~*

~~3413A.2.28~~ 3413A.1.22 ~~FEMA 356~~ ASCE 41 Section 9.2.4. *Modify ~~FEMA 356~~ ASCE 41 Section 9.2.4 with the following:*

Linear Procedures. *Verification of the interstory lateral displacements, isolator displacements, the strength adequacy of the seismic force resisting system and isolation system, and anchorage to the foundation shall be accomplished using the Nonlinear Dynamic Procedure.*

~~3413A.2.29~~ 3413A.1.23 ~~FEMA 356~~ ASCE 41 Section 9.2.5.1. *Modify ~~FEMA 356~~ ASCE 41 Section 9.2.5.1 with the following:*

Nonlinear Static Procedure. *Verification of the interstory lateral displacements, isolator displacements, the strength adequacy of the seismic force resisting system and isolation system, and anchorage to the foundation shall be accomplished using the Nonlinear Dynamic Procedure.*

~~3413A.2.30~~ 3413A.1.24 ~~FEMA 356~~ ASCE 41 Section 9.2.9. *Modify ~~FEMA 356~~ ASCE 41 Section 9.2.9 with the following:*

Isolation System Testing and Design Properties - Production Tests. *Production testing and associated acceptance criteria shall be as approved by the enforcement agent.*

~~3413A.2.31~~ 3413A.1.25 ~~FEMA 356~~ ASCE 41 Section 9.2.9.2.9. *Modify ~~FEMA 356~~ ASCE 41 Section 9.2.9.2.9 with the following:*

Testing Similar Units. *The testing exemption shall require approval by the enforcement agent.*

~~3413A.2.32~~ 3413A.1.26 ~~FEMA 356~~ ASCE 41 Section 9.3.4. *Modify ~~FEMA 356~~ ASCE 41 Section 9.3.4 with the following:*

Linear Procedures. *Verification of the interstory lateral displacements, damper relative velocities and displacements, the strength adequacy of the seismic force resisting system and damping system, and anchorage to the foundation shall be accomplished using the Nonlinear Dynamic Procedure.*

~~3413A.2.33~~ 3413A.1.27 ~~FEMA 356~~ ASCE 41 Section 9.3.5.1. *Modify ~~FEMA 356~~ ASCE 41 Section 9.3.5.1 with the following:*

Nonlinear Static Procedure. *Verification of the interstory lateral displacements, damper relative velocities and displacements, the strength adequacy of the seismic force resisting system and damping system, and anchorage to the foundation shall be accomplished using the Nonlinear Dynamic Procedure.*

~~3413A.2.34~~ 3413A.1.28 ~~FEMA 356~~ ASCE 41 Section 9.3.8. *Modify ~~FEMA 356~~ ASCE 41 Section 9.3.8 with the following:*

Required Tests of Energy Dissipation Devices - Production Tests. *Production testing and associated acceptance criteria shall be as approved with the enforcement agent.*

~~3413A.2.35~~ 3413A.1.29 ~~FEMA 356~~ ASCE 41 Chapter 10. *Replace ~~FEMA 356~~ ASCE 41 Chapter 10 as follows:*

Simplified Rehabilitation. *Not permitted by OSHPD.*

~~***3413A.2.36 FEMA 356 Section 11.1.*** *Modify FEMA 356 Section 11.1 with the following:*~~

~~***Scope.*** *The seismic rehabilitations of nonstructural components and system shall satisfy the requirements of Building Standards Administrative Code (Part 1, Title 24 CCR), Chapter 6.*~~

~~***3413A.2.37 FEMA 356 Section 11.2.*** *Modify FEMA 356 Section 11.2 by the following:*~~

~~***Procedure.*** *The seismic rehabilitations objective shall be to satisfy the Nonstructural Performance Requirements of Building Standards Administrative Code (Part 1, Title 24 CCR), Chapter 6.*~~

3413A.1.30 ASCE 41 Section 11.3.2. *Modify ASCE 41 Section 11.3.2 with the following:*

Operational Nonstructural Performance Level (N-A) Requirements. *All Structures shall meet Immediate Occupancy Nonstructural Performance Level (N-B) and facility shall have on-site supplies of water and holding tanks for wastewater, sufficient for 72 hours emergency operations, are integrated into the building plumbing systems. As an alternative, hook-ups to allow for the use of transportable sources of water and sanitary waste water disposal have been provided. An on-site emergency system as defined within Part 3, Title 24 is incorporated into the building electrical system for critical care areas. Additionally, the system shall provide for radiological service and an onsite fuel supply for 72 hours of acute care operation.*

3413A.1.31 ASCE 41 Section 11.9.4.3.1. *Modify ASCE 41 Section 11.9.4.3.1 with the following:*

Ceilings in all Categories shall satisfy requirements for ceilings in Category C specified in this section.

3413A.1.32 ASCE 41 Section 11.10.2.4. *Modify ASCE 41 Section 11.10.2.4 by the following:*

For general acute care hospital, Nonstructural Evaluation shall comply with requirements of Section 11.2, Chapter 6, Part 1, Title 24.

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NOTATION:

- *Authority: Health and Safety Code Section 130005(g) & 130021*
- *Reference: Health and Safety Code Section 1275, 129790, 129850 & 130005(g)*

CHAPTER 35 - REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section 102.4, *Appendix Chapter 1*.

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ASCE/SEI
American Society of Civil Engineers
Structural Engineering Institute
1801 Alexander Bell Drive
Reston, VA 20191-4400

Standard reference number the	Title	Referenced in code section number
41-06	*Seismic Rehabilitation of Existing Buildings*	*3403.2.3, 3403A.13, 3415.5, .415.6, 3415.8, 3417.2, 3417.5, 3417.7, 3417.9*

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FEMA
Federal Emergency Management Agency
Federal Center Plaza
500 C Street S.W.
Washington, DC 20472

Standard reference number	Title	Referenced in code section number
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~~*FEMA 356*~~	~~*Prestandard and Commentary for the Seismic Rehabilitation of Buildings*~~	~~*3403.2.3.3, 3403A.2.3.3, 3403A.13*~~

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PTI
Post-Tensioning Institute
1717 W. Northern Avenue, Suite 114
Phoenix, AZ 85021

Standard reference Number	Title	Referenced in code section number
PTI-2004	*Recommendations for Prestressed Rock and Soil Anchors (4th Edition)*	*1813A.1*

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NOTATION:

- *Authority: Health and Safety Code Section 130005(g) & 130021*
- *Reference: Health and Safety Code Section 1275, 129790, 129850 & 130005(g)*